

NOTES AND DESCRIPTIONS OF INDIAN FISHES.

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PART II.

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ARIIDÆ.

Arius malabaricus (Day). "Ettachulli."Head $3\frac{1}{2}$ to $3\frac{3}{5}$; depth $4\frac{2}{3}$; D. i, 7; A. v to ix, 11 or 12.

Body well compressed, long and slender. Head flat below, convex above, width $1\frac{1}{5}$ to $1\frac{1}{4}$ its length. Snout broadly obtuse, length $\frac{2}{5}$ to $\frac{2}{3}$ its width or $\frac{2}{3}$ to $2\frac{4}{5}$ in head. *Eye*—large, hind edge of pupil midway in head, diameter 4 to $4\frac{2}{3}$; eyelid free. Mouth broad, superiorly terminal, width $2\frac{3}{5}$ to $2\frac{2}{3}$ in head. Maxillary barbel reaches back far as depressed pectoral tip; outer mental barbel $\frac{1}{5}$ to $\frac{2}{5}$ in depressed pectoral; inner mental barbel reaches pectoral origin. Bands of fine teeth, moderately wide in each jaw; narrow band transversely across vomer; small patch of fine teeth on each palatine. Nostrils quite large; anterior close to front snout edge; posterior with broad fleshy flap, diameter but slightly less than pupil. Interorbital but broadly convex, $2\frac{3}{4}$ to 3 in head. Narrow fontanel extends to occipital plate. Casque and sides of head all covered with thin skin, all with more or less coarse venules, these also extend over humeral region. Occipital process and dorsal buckler form complete bony bridge. *Gill-rakers*— 5×9 , lanceolate, slightly less than gill-filaments or 2 in eye.

Fins—Dorsal inserted midway between snout tip and origin of adipose fin; spine compressed, front edge with 5 antrorse barbs terminally, hind edge with 6, also series of 6 smaller short close-set points on lower front edge, spine $1\frac{1}{5}$ to $1\frac{1}{2}$ in head; first branched ray 1 to $1\frac{2}{3}$. Adipose fin large, inserted trifle nearer base of last dorsal ray than caudal base, fin $1\frac{2}{3}$ in head. Anal origin midway between dorsal origin and caudal base, first branched ray $1\frac{2}{3}$ in head. Caudal well forked, long as head. Caudal peduncle well compressed, least depth $1\frac{3}{5}$ to $1\frac{2}{3}$ its length or 3 to $3\frac{1}{5}$ in head. Pectoral about long as head; spine $\frac{3}{4}$ to $\frac{2}{5}$ of fin, outer edge with 5 or 6 weak antrorse barbs terminally and 10 or 11 irregular obsolete denticles basally; inner edge of spine with 3 to 5 antrorse barbs terminally. Humeral process $\frac{2}{3}$ length of spine. Ventral inserted little behind dorsal base, 2 in head. *Colour*—Neutral-gray above, becoming whitish below. Barbels dusky. All fins with more or less neutral dusky terminally. Four examples. 58 to 73 mm.

CYNOGLOSSIDÆ.

Cynoglossus cynoglossus (Buchanan—Hamilton). "Manthal."

Head $\frac{3}{4}$ to $4\frac{1}{4}$; depth $3\frac{2}{5}$ to 4; D. 98 or 99; C. 10; A. 79 or 80; scales 81 to 85 in median lateral line, counted from opposite hind edge of gill-opening; 16 scales between median and upper lateral lines, 23 below at widest part of body to anal base.

Body elongately ovoid, widest at first $\frac{2}{3}$ its length. Snout 3 to $3\frac{1}{2}$ in head, measured from upper eye. Upper eye $8\frac{1}{2}$ to $8\frac{1}{2}$ in head. Lips entire. Mouth cleft $3\frac{1}{2}$ to 4 in head. Few small teeth developed on blind side of jaw only. Two nostrils, one between eyes at lower front eye edge, another before eye with

slight cutaneous rim. Interorbital very narrow concave groove. No gill-rakers. Scales of left side with 13 to 18 basal radiating striæ, edges narrowly scalloped; apical denticles 16 to 25, basal elements in 3 to 5 series. Scales of right side with 13 or 14 basal radiating striæ; apical denticles 19 to 22, with 3 or 4 series of basal elements. Scales 23 from rictus to hind edge of gill-opening. One lateral line on dextral side, 2 sinistral. Fins—Dorsal begins little before eye. Caudal $1\frac{7}{8}$ to 2 in head. Ventral largely detached from anal. Colour—Left side finely mottled drab-brown, showing now as obscure irregularly vertical pale streaks. Dorsal, anal, and caudal neutral-slaty, margined with pale or whitish. Inside gill-opening neutral-slaty. Eyes pale slaty-gray. Right side of body whitish, vertical fins showing dusky. Young with dorsal and anal but little darker, simply grayish. Three examples, 76 to 110 mm.

Achirus cynoglossus Buchanan-Hamilton appears to be the oldest name for this species. *Cynoglossus hamiltoni* Gunther was proposed to eliminate tautonomy.

MUGILIDÆ.

Mugil carinatus (Valenciennes). "Malam".

Head $3\frac{1}{2}$; depth $\frac{7}{8}$; D. IV—1, 8, i; A. III, 9; scales 37 or 38 in lateral line to caudal base or 5 more on latter; 11 or 12 scales transversely; 22 to 24 predorsal scales.

Body elongately fusiform, well compressed, edges rounded, deepest at spinous dorsal origin. Head moderate, width $1\frac{3}{4}$ its length. Snout broadly obtuse, length $\frac{2}{5}$ to $\frac{1}{2}$ its width or 4 to $4\frac{1}{2}$ in head. Eye—Moderate, hind edge slightly before middle in head length; $4\frac{1}{5}$ to $4\frac{2}{3}$ in head. Adipose-lid moderate, covers about $\frac{1}{4}$ to $\frac{1}{3}$ of eye. Mouth inferior, angle obtuse, width $3\frac{1}{5}$ to 4 in head; symphyseal knob single. Maxillary exposed, very narrow, reaches eye. No teeth. Transverse groove across vomer. Upper lip moderate, forms end of snout. Interorbital broadly convex, $2\frac{1}{4}$ to $2\frac{3}{4}$ in head. Preorbital narrow, edge very finely serrated, reaches slightly beyond front eye edge. Gill-rakers— 26×40 , finely lanceolate, $1\frac{2}{3}$ in eye, equal gill-filaments. Scales with 5 or 6 basal radiating striæ; 30 to 33 apical lobules, with as many radiating weak striæ; circuli fine; 6 scales between depressed spinous dorsal tip and soft dorsal origin; soft dorsal, anal and caudal finely scaled; axillary pectoral scale $\frac{1}{3}$ of fin; row of few small scales on preorbital.

Fins—Spinous dorsal origin little nearer snout tip than caudal base, first spine 2 in head. Soft dorsal origin little nearer spinous dorsal origin than caudal base, first branched ray 2 in head. Anal origin slightly before that of soft dorsal, third spine $3\frac{1}{2}$ to 4 in head, first branched ray 2. Caudal deeply emarginate, lobes pointed, equal head. Caudal peduncle compressed, least depth $1\frac{1}{3}$ to $1\frac{1}{2}$ in its length or $2\frac{1}{3}$ to $2\frac{1}{2}$ in head. Pectoral reaches slightly beyond spinous dorsal origin or about $\frac{4}{5}$ in ventral, fin $1\frac{1}{5}$ to $1\frac{1}{4}$ in head. Ventral origin about opposite tip of depressed pectoral, fin $1\frac{3}{4}$ to $1\frac{4}{5}$ to anal or $1\frac{2}{3}$ to $1\frac{3}{4}$ in head. Colour—Back brownish, pale to whitish below. Fins paler, narrow dusky edges on ends of dorsals and caudal behind. Slight slaty blotch at bases of uppermost pectoral rays, also inner axillary bases, at least of upper, dusky. Three examples, 126 to 134 mm.

POLYNEMIDÆ.

Polydactylus heptadactylus (Cuvier). "Neurakudigan."

Head 3; depth $3\frac{1}{3}$; D. VIII—1, 12; A. III, 11; tubular scales 45 in lateral line to caudal base and 16 or 18 more on latter; 6 scales above lateral line, 9 or 10 below; 24 to 28 predorsal scales.

Body elongately ovoid, well compressed, deepest about midway in spinous dorsal. Head width $2\frac{1}{4}$ to $2\frac{3}{4}$ in its length. Snout obtusely conic, length $\frac{3}{8}$ to $\frac{2}{3}$ its width or 5 to $5\frac{1}{2}$ in head. Eye—Center about first fourth in head,

length $4\frac{1}{4}$ to $4\frac{1}{5}$. Adipose eyelid entirely covers eye. Mouth large, inferior mandible tip opposite hind nostril. Maxillary, from snout tip, $1\frac{2}{3}$ to $1\frac{3}{4}$ in head, expansion $1\frac{2}{5}$ to $1\frac{3}{4}$ in eye. Teeth fine, uniform, uniserial in jaws; similar short transverse row across vomer; band of minute fine teeth on each pterygoid. Interorbital convexly elevated, with median depression, width 4 in head. Hind preopercle edge serrated, with spine below at angle. *Gill-rakers*—Finely lanceolate, 21×21 , $1\frac{1}{5}$ in eye. Gill-filaments $\frac{3}{5}$ of gill-rakers. Scales with 6 or 7 basal radiating striæ; apical denticles 51 or 52, basal elements in 8 or 9 series; circuli fine. Strong spine at beginning of lateral line.

Fins—Third dorsal spine $1\frac{2}{5}$ to $1\frac{1}{2}$ in head; first branched dorsal ray $1\frac{2}{5}$. Anal like soft dorsal; third spine longest, $3\frac{2}{5}$ to $3\frac{1}{2}$ in head; first branched ray $1\frac{2}{5}$ to $1\frac{4}{5}$. Caudal long, deeply forked, with long slender pointed lobes $2\frac{1}{4}$ to $2\frac{1}{2}$ to caudal base. Caudal peduncle strongly compressed, least depth $1\frac{1}{2}$ to $1\frac{3}{5}$ in its length or $2\frac{1}{10}$ to $2\frac{1}{2}$ in head. Pectoral reaches anal, $1\frac{1}{10}$ in head; filaments 7, reach soft anal origin. Ventral reaches $\frac{7}{8}$ to $\frac{9}{10}$ to 1 anal, length $1\frac{2}{5}$ to $1\frac{3}{4}$ in head. *Colour*—Back olive-brown, sides and below pale to whitish. Pectoral neutral slaty-blue, filaments white. Fins all more or less dusky terminally. Iris silvery. Snout whitish. Inside gill-opening dusky. Three examples, 96 to 103 mm.

SCOMBRIDÆ.

Scomber microlepidotus Ruppell. "Ayila".

Head $3\frac{1}{2}$; depth $4\frac{1}{2}$; D. x—1, 10×5 ; A. 1, 10×5 .

Body strongly compressed, fusiform. Head greatly compressed, deep, width $2\frac{1}{2}$ its length, which $3\frac{1}{2}$ in head measured from upper jaw tip. *Eye*—Large, hind edge midway in total head length. Adipose eyelid large, leaves only median third of eye exposed. Mouth inclined, moderate, lower jaw lightly protruding. Maxillary slips below broad preorbital its entire length, reaches opposite hind pupil edge, expansion $2\frac{1}{4}$ in eye, length $2\frac{1}{10}$ in head measured from upper jaw tip. Single row of moderately fine short even teeth in each jaw, upper covered by tip, lower exposed. No teeth on mouth roof or tongue. Mandible 1 in head. Interorbital narrow, very slightly concave, $4\frac{2}{5}$ in head measured from upper jaw tip. Broad preopercle flange and opercle with weak radiating striæ. *Gill-rakers*— 16×34 , strongly compressed, slender, $\frac{2}{5}$ longer than gill-filaments or $3\frac{1}{10}$ in head measured from upper jaw tip and inner edge, of each with close-set fringe of fine setæ. Corselet distinct, rest of scales minute on trunk, mostly fallen.

Fins—Spinous dorsal inserted at first third of entire length, first dorsal spine $2\frac{1}{3}$ in total head length. Soft dorsal inserted much nearer caudal base than eye, first branched ray $3\frac{2}{5}$ in head. Anal like soft dorsal, opposite, first branched ray 4 in head. Caudal small, emarginate. Caudal peduncle slender, least depth about half its length or 2 in eye. Pectoral high, origin level with upper $\frac{2}{5}$ of eye; fin $2\frac{1}{5}$ in eye. Ventral inserted opposite spinous dorsal origin, $2\frac{1}{3}$ in head; $2\frac{1}{5}$ to anal. *Colour*—Back lilac brown, sides and below whitish. Iris slaty. Fins all pale brownish. One example, 117 mm.

CARANGIDÆ.

Caranx djeddaba (Forskål). "Para".

Head $3\frac{1}{2}$; depth 3; D. VIII—1, 23; A. II—1, 20; scales 35×45 , of which 7 on caudal base; 11 scales above lateral line, 19 below; 30 predorsal scales.

Body elongately fusiform, greatest depth midway in its length, strongly compressed. Head greatly compressed, width half its length, upper profile little more inclined than lower. Snout conic, long as wide or $3\frac{1}{4}$ in head, measured from upper jaw tip. *Eye*—Large, hind pupil edge about midway in total head length, diameter equals snout. Adipose-lid only covers hind third of eye. Mouth moderate, mandible protruding slightly. Maxillary inclined, end well exposed, reaches pupil, expansion 2 in eye, length $2\frac{2}{5}$ in head measured from upper jaw tip. Teeth very small, even, uniserial, minute and in narrow band

on each palatine, none on vomer; tongue roughened with minute teeth. Interorbital convexly elevated, with median keel extending predorsally to spinous dorsal; width equals eye. Preorbital slightly wider than maxillary expansion. *Gill-rakers*— 11×28 , slender, lanceolate, little longer than gill-filaments or $1\frac{2}{3}$ in eye. Scales fine, well adherent, cover breast and chest; 12 to 16 series of vertical striæ each side of median axis; several innermost continuous above and below. Curved section of lateral line $2\frac{3}{4}$ in straight section; scutes of latter section enlarged, deepest 2 in orbit.

Fins—Spinous dorsal origin slightly nearer, soft dorsal origin than hind eye edge, third spine $2\frac{2}{3}$ in total head length. Soft dorsal inserted midway between mandible tip and caudal base, first branched ray half of head. Soft anal opposite soft dorsal, similar; first branched ray $2\frac{1}{5}$ in head. Caudal deeply forked, slender lobes pointed, equal head. Caudal peduncle slender, least depth 2 in its length or 2 in orbit. Pectoral long, falcate; $2\frac{1}{3}$ to caudal base, extends well beyond front of straight section of lateral line. Ventral origin opposite that of pectoral, reaches little beyond vent or $1\frac{1}{2}$ to soft anal origin, fin $2\frac{1}{10}$ in head. *Colour*—Back rather dark neutral, sides below and under surface silvery-white. Spinous dorsal tinged dusky; soft dorsal and caudal with grayish and other fins whitish. Large blackish neutral blotch on opercle above, little smaller than eye, but larger than pupil and not extending on upper portion of shoulder girdle. One example, 110 mm.

Caranx kalla Valenciennes. "Para."

Head 3 to $3\frac{1}{8}$; depth $2\frac{2}{3}$ to $2\frac{3}{4}$; D. VIII—I, 24; A. II—I, 21; scales 35 to 37×37 , of which last 7 on caudal base; 11 scales above lateral line, 19 or 20 below; 26 to 22 predorsal scales.

Body elongately ovoid, greatest depth at soft dorsal origin, strongly compressed. Head greatly compressed, width $2\frac{1}{8}$ to $2\frac{1}{2}$ its length, upper profile little more inclined than lower. Snout conic, length equals width or $3\frac{1}{2}$ to 4 in head, measured from upper jaw tip. *Eye*—Large, hind pupil edge midway in total length of head; $2\frac{2}{3}$ to 3 in head measured from upper jaw tip. Adipose lid only covers hind third of eye. Mouth moderate, mandible slightly protruding; Maxillary inclined, end well exposed and reaches pupil, expansion $2\frac{1}{4}$ to 2 in eye, length $2\frac{7}{8}$ to 3 in head. Teeth in jaws very small, even, uniserial, broad areas of minute close-set ones on vomer, palatines and pterygoids; 5 parallel longitudinal broad bands of teeth on tongue. Interorbital moderately elevated convexly, with median keel extending predorsally to spinous dorsal; width $3\frac{1}{4}$ to $3\frac{1}{3}$ in head from upper jaw tip. Preorbital equally wide at maxillary expansion. *Gill-rakers*— 10×27 , slender, lanceolate, equal gill filaments or 2 in eye. Scales fine, closely adherent, cover chest and breast; 15 to 26 series of vertical striæ each side of median axis, several innermost continuous above and below. Curved section of lateral line $1\frac{1}{2}$ to $1\frac{3}{5}$ in straight section; scutes in straight section enlarged, deepest 2 in orbit.

Fins—Spinous dorsal origin slightly nearer soft dorsal origin than hind eye edge third spine $2\frac{3}{4}$ to 3 in total head length. Soft dorsal inserted midway between mandible and caudal base, first branched ray $1\frac{5}{8}$ to 2 in head. Soft anal opposite soft dorsal, similar, first branched ray $2\frac{1}{3}$ to $2\frac{1}{2}$ in head. Caudal deeply forked, upper lobe much longer; slender pointed lobes equal head. Caudal peduncle slender, least depth half its length or half of orbit. Pectoral reaches $2\frac{1}{4}$ to caudal base or fourth to sixth scute in straight section of lateral line. Ventral origin opposite that of pectoral, reaches slightly beyond vent or slightly less than half way to soft anal origin, fin $1\frac{1}{2}$ to $2\frac{1}{4}$ in head. *Colour*—Back rather dark neutral tint, sides below and lower surface silvery white. Dorsals and caudal tinged with grayish, other fins whitish. Large blackish blotch on opercle above, with good portion extending also over on shoulder-girdle above, whole but less than eye. Two examples, 97 to 101 mm.

Besides the character of the large dark opercular blotch this species differs from *Caranx djeddaba* in the slightly wider naked predorsal area and greater curvature of the lateral line. Except for the small ventral Day's figure agrees in most respects.

Caranx oblongus Valenciennes. "Valodu."

Head $2\frac{2}{5}$; depth 2; D. VIII—I, 22; A. II—I, 17; scales 57×37 in lateral line, of which last 7 on caudal base.

Body rather deeply ovoid, strongly compressed, predorsal and orbital keel strong. Head greatly compressed, deep, upper profile little more inclined, width $2\frac{3}{4}$ its length. Snout conic, width $1\frac{1}{4}$ its length, which 3 in head measured from upper jaw tip. Eye—Large, center very slightly advanced in total head length, $3\frac{1}{8}$ in head. Maxillary well inclined, rather large, reaches eye, expansion 2 in eye or $\frac{3}{4}$ of preorbital width, length 3 in head. Teeth fine, very small, in bands in jaws, on vomer palatines and tongue. Mandible protrudes, 2 in total head length. Interorbital, convexly elevated, with median keel rising up in front to spinous dorsal, width 4 in head measured from upper jaw tip. Cheek and opercle smooth. Gill-rakers— 9×24 , lanceolate, equal filaments or $2\frac{1}{2}$ in eye. Scales fine, closely adherent, none on breast or subpectoral region; cycloid, with 17 to 20 series of vertical striæ each side of median axis, several innermost may more or less converge and join. Scutes of lateral line not enlarged, straight section $\frac{3}{4}$ of curved.

Fins—Spinous dorsal inserted slightly nearer beginning of straight section of lateral line than mandible tip; third spine 3 in total head length. Soft dorsal origin midway between front eye edge and caudal base; first branched ray $1\frac{5}{8}$ in head. Caudal well forked, slender lobes even, $1\frac{1}{2}$ in head. Caudal peduncle small, slender, least depth half its length or $2\frac{1}{2}$ in eye. Pectoral equals head, reaches straight section of lateral line. Ventral inserted opposite pectoral origin, reaches $\frac{3}{4}$ to soft anal. Latter opposite soft dorsal, first branched ray 2 in head. Colour—Brown on back, silvery white below, opercle neutral above. Iris silvery white. Fins all pale. Dorsal and caudal little grayish. One example, 93 mm.

LACTARIIDÆ.

Lactarius lactarius (Schneider). "Adavu."

Head $2\frac{1}{2}$ to $2\frac{2}{3}$; depth $2\frac{2}{3}$ to 3; D. VIII—I, 21 or 22; A. III, 25 to 27; scales 70 (pockets) in lateral line to caudal base.

Body ovoid, well compressed. Head deep, strongly compressed, width $2\frac{7}{8}$ to 3 in its length. Snout conic, length $\frac{4}{5}$ to $\frac{7}{8}$ its width or 4 in head measured from upper jaw tip. Eye—Large, hind pupil edge slightly before middle in total head length, $3\frac{1}{2}$ to $3\frac{4}{5}$ in head measured from upper jaw tip. Mouth large, greatly inclined. Maxillary reaches opposite middle of eye, expansion $1\frac{1}{4}$ to 2 in eye, length 2 to $2\frac{1}{2}$ in head. Mandible well protruding, $1\frac{1}{2}$ to 2 in total head length. Teeth uniserial and uniform in jaws, also pair of wide-set canines above and small one symphyseal. Vomer with A-shaped row of small teeth. Interorbital convexly elevated, width $3\frac{2}{3}$ to 4 in head measured from upper jaw tip. Superciliary and frontal ridges parallel, latter higher. Preorbital less in width than maxillary expansion. Gill-rakers— 3×12 , lanceolate, little longer than gill-filaments or 2 in eye. Scales very caducous, all having fallen.

Fins—Spinous dorsal inserted much nearer mandible tip than caudal base, second spine $2\frac{2}{3}$ to $3\frac{1}{3}$ in total head length. Soft dorsal inserted midway between eye center and caudal base, first branched ray midway between hind eye edge and caudal base in younger, $2\frac{2}{3}$ to $2\frac{3}{5}$ in head. Anal origin midway between front eye edge and caudal base, slightly more advanced in younger, third spine $4\frac{2}{3}$ to 5 in head, first branched ray $2\frac{1}{4}$ to $2\frac{1}{2}$. Caudal strongly forked, slender lobes pointed, $1\frac{1}{4}$ to $1\frac{3}{5}$ in head. Caudal peduncle strongly compressed

least depth $1\frac{1}{3}$ to $1\frac{1}{2}$ in its length or $3\frac{1}{2}$ to $4\frac{1}{8}$ in head. *Colour*—Brown on back, sides and below silvery to whitish. Fins pale, dorsals and caudal tinged brownish. Deep brown blotch about size of pupil, on opercle above and another at upper end of opercular flap. Iris silvery-white, also sides of head and abdomen. Three examples, 84 to 113 mm.

LEIOGNATHIDÆ.

Secutor ruconius (Buchanan—Hamilton). "Chakkara mullan."

Head 3 to $3\frac{2}{3}$; depth $1\frac{2}{3}$ to $1\frac{3}{4}$; D. IX, 15, i; A. III, 14, i or iii. 15, i; scales 50 in median lateral series to caudal base and 4 more on latter; tubes in lateral line 18 to 20.

Body deeply ovoid, strongly compressed, edges trenchant. Head strongly compressed, width $2\frac{1}{2}$ to $2\frac{2}{3}$ in its total length. Snout obtuse, long as wide, length $3\frac{1}{4}$ to $3\frac{1}{2}$ in head measured from upper jaw tip. *Eye*—moderate, about midway in head length, $2\frac{2}{3}$ to $2\frac{1}{2}$ in head. Mouth superiorly terminal. Maxillary 2 to $2\frac{1}{2}$ in head. Teeth very minute, obsolete, in narrow band apparently only in upper jaw. Nostrils close together, above and level with front eye edge, posterior vertical slit, larger. Interorbital elevated, $3\frac{1}{4}$ to $3\frac{2}{3}$ in head. Lower preopercle edge finely serrated, serræ becoming obsolete behind. *Gill-rakers*— 6×17 , lanceolate, slightly less than gill-filaments or $\frac{1}{3}$ of eye. Scales very caducous, most all fallen.

Fins—Spinous dorsal inserted behind pectoral base, second spine $1\frac{3}{4}$ to $1\frac{1}{2}$ in total length. Second anal spine $2\frac{1}{5}$. Caudal well forked, lobes pointed, equal head. Caudal peduncle compressed, least depth 1 to $1\frac{1}{5}$ in length or 1 to 2 in eye. Pectoral $1\frac{1}{2}$ to $1\frac{1}{4}$ in head. Ventral $2\frac{1}{2}$ to $2\frac{1}{3}$. *Colour*—Dull brownish generally sides of head and costal region silvery-white. About dozen vertical dark brown streaks on back, irregular or some broken into spots. Dusky streak from lower front eye edge to mandibular articulation. Fins all pale. Dark brown line along dorsal bases. Two examples, 51 to 73 mm.

POMADASIDÆ.

Pomadasis hasta (Bloch). "Kurukuruppan."

Head $2\frac{2}{3}$ to $2\frac{3}{5}$; depth $2\frac{1}{2}$ to $2\frac{4}{5}$; D. XI 13; A. III, 6 or 7; scales 43 to 45 in lateral line to caudal base and 6 to 8 more on latter; 4 scales above lateral line, 12 below; predorsal scales 23 or 24.

Body ovoid, back elevated, well compressed. Head width 2 to $2\frac{1}{5}$ in its length. Snout obtusely convex, length $\frac{2}{3}$ or $\frac{1}{2}$ its width or $3\frac{1}{2}$ to $4\frac{1}{2}$ in head measured from upper jaw tip. *Eye*—moderate, hind edge midway in head length, diameter $3\frac{2}{3}$ in head. Mouth superiorly terminal, upper jaw slightly protruding, moderate. Maxillary entirely ensheathed above by preorbital, reaches about opposite front pupil edge, $2\frac{4}{5}$ to $2\frac{7}{5}$ in head, expansion 2 to 3 in eye. Bands of fine uniform teeth in each jaw, none on mouth roof or tongue. Nostrils rather large, close together; front one circular and at last third in snout; hind one close before front eye edge. Interorbital broadly and slightly convex, 5 in head. Preopercle edge serrate, serræ coarser at angle. Suprascapula serrate. *Gill-rakers*— 6×12 , lanceolate, $1\frac{1}{2}$ in gill-filaments or $2\frac{1}{4}$ in eye. Scales with 8 or 9 basal radiating striæ; apical denticles 23 or 24, basal elements in 3 or 4 series; circuli fine.

Fins—Fourth dorsal spine $1\frac{1}{2}$ to $1\frac{3}{5}$ in total head length. Third dorsal ray $1\frac{1}{3}$. Second anal spine $1\frac{2}{3}$ to $1\frac{3}{4}$, second anal ray $1\frac{1}{4}$ to $1\frac{1}{5}$. Caudal truncate, $1\frac{1}{3}$ to $1\frac{1}{2}$ in head. Caudal peduncle well compressed, least depth $1\frac{1}{5}$ to $1\frac{1}{4}$ its length or $3\frac{2}{5}$ to $3\frac{4}{5}$ in head. Pectoral $1\frac{1}{10}$ to $1\frac{1}{5}$. Ventral $1\frac{2}{3}$ to $1\frac{1}{4}$, reaches 1 to $1\frac{1}{4}$ to anal, spine $1\frac{1}{3}$ to $1\frac{1}{2}$ in fin. *Colour*—Back pale brownish generally, with 7 obscure saddle-like blotches of about same tint. Most fins, except white ventrals, more or less dusky terminally. Round blackish blotch on opercle above, little less than eye. Dusky spot in pectoral axil. Three examples, 49 to 54 mm.

SCIAENIDÆ.

Johnius miles (Lacépède). "Korakulti."

Head $2\frac{1}{2}$ to 3; depth $3\frac{1}{2}$ to $3\frac{3}{4}$; D. x, 1, 26, i or 27, i; A. 11, 7, i; tubular scales in lateral line 46 to 49 to caudal base and 4 to 7 more on latter; 5 scales above lateral line, 7 or 8 below; 26 or 27 predorsal scales.

Body elongately ovoid, well compressed. Head width $1\frac{1}{3}$ to $2\frac{1}{5}$ in its length. Snout obtusely convex, length $\frac{3}{4}$ to $\frac{2}{3}$ its width or $3\frac{2}{3}$ to $3\frac{3}{4}$ in head. *Eye*—moderate, superior, center at first third in head. Mouth inferiorly terminal, rather large. Maxillary entirely ensheathed above by preorbital, $2\frac{1}{4}$ to $2\frac{3}{4}$ in head, expansion $1\frac{1}{2}$ in eye, reaches opposite $\frac{4}{5}$ of eye. Bands of fine teeth in jaws, upper forward teeth little enlarged as single outer row, also lower inner row slightly enlarged. No teeth on tongue or mouth roof. On each side of mandibular symphysis below 2 pores, outer larger. No barbel. Nostrils close together before front of eye; front one pore; hind one short slit close on front eye edge. Interorbital broadly convex, $2\frac{5}{8}$ to $3\frac{1}{2}$ in head. Bones of head cavernous. Preopercle edge rather weakly serrate, with slightly larger spine at angle. *Gill-rakers*— 6×15 , lanceolate, $\frac{3}{4}$ of gill-filaments or half of eye. Scales with 9 or 10 basal radiating striæ; apical denticles 23 to 27, basal elements in 6 or 8 series; circuli fine. Tubes of lateral line posteriorly, with few slight branches.

Fins—Third dorsal spine $2\frac{2}{3}$ to $2\frac{3}{4}$ in head. Second dorsal ray $2\frac{1}{6}$ to $2\frac{4}{5}$, second anal spine $2\frac{3}{4}$ to $2\frac{5}{6}$. Third anal ray $1\frac{3}{4}$ to $1\frac{7}{8}$. Caudal with median rays prolonged to point, 1 to $1\frac{1}{6}$ in head. Caudal peduncle well compressed, least depth equals its length. Pectoral $1\frac{1}{2}$ in head. Ventral $\frac{2}{3}$ to $\frac{2}{3}$ to anal, $1\frac{1}{2}$ to 2 in head, spine $1\frac{2}{3}$ to $1\frac{3}{4}$ in fin. *Colour*—Brownish generally, sprinkled with minute dots over back and sides. Spinous dorsal dusky black and soft dorsal and caudal dull brown with gray tint. Other fins pale. Ventral with some dusky dots terminally. Inside gill-opening dusky. Two examples, 87 to 94 mm.

Sciaena macroptera (Bleeker). "Korakulti."

Head $3\frac{2}{5}$; depth $3\frac{1}{3}$; D. x, 1, 31 i; A. 11, 7, i; tubular scales in lateral line 45 to caudal base and 6 more on latter; 4 scales above lateral line, 8 below; 26 predorsal scales.

Body elongately ovoid, strongly compressed, deepest about middle of spinous dorsal. Head width $1\frac{4}{5}$ its length. Snout obtusely convex, length $\frac{2}{3}$ its width or $3\frac{1}{2}$ in head. Snout obtusely convex, length $\frac{2}{3}$ its width or $3\frac{1}{2}$ in head. *Eye*—small, center at first third in head length, diameter $4\frac{1}{2}$. Mouth inferiorly terminal, rather large. Maxillary entirely ensheathed above by preorbital, $2\frac{1}{3}$ in head, expansion 2 in eye and reaches opposite hind pupil edge. Broad bands of uniform fine teeth in jaws, outer upper and inner lower rows slightly enlarged. No teeth on tongue or mouth roof. Short fleshy barbel at symphysis, about $\frac{1}{6}$ of eye, with 2 pores each side and one in front, outermost largest. Front nostril midway in snout length, hind one larger, vertical, close before front eye edge. Interorbital broadly convex, 3 in head. Bones of head cavernous. Preopercle flange and edge rather firmly membranous, edge with feeble serræ. *Gill-rakers*— 5×7 , lanceolate, half length of gill-filaments or $\frac{1}{3}$ of eye. Scales with 10 or 11 basal radiating striæ; apical denticles 31 to 40, basal elements in 5 to 7 series; circuli fine. Tubes of lateral line with 3 or 4 short accessory branches.

Fins—Third dorsal spine $2\frac{2}{3}$ in head. Third dorsal ray $2\frac{1}{8}$. Second anal spine $2\frac{2}{3}$. Second anal ray $1\frac{3}{4}$. Caudal with median rays prolonged to point, 3 in combined head and trunk. Caudal peduncle well compressed, least depth equals its length or $3\frac{2}{3}$ in head. Pectoral $1\frac{1}{2}$ in head. Ventral reaches half way to anal, $1\frac{2}{3}$ in head, spine $1\frac{2}{3}$ in fin. *Colour*—Rather warm brownish above, sprinkled with minute dark dots over back and side. Spinous dorsal dusky black

other vertical fins grayish, darker terminally. Pectoral pale. Ventral with dusky dots terminally. Inside of gill-opening tinged with dusky. Opercle olive-brown, darker than rest of head. One example, 89 mm.

DREPANIDÆ.

Drepane punctata (Gmelin). "Payindi".

Head $2\frac{1}{4}$; depth $1\frac{1}{8}$; D. VIII 21, i; A. III, 17, i; tubular scales 45 in lateral line to caudal base; 16 scales above lateral line, 26 below to soft anal origin.

Body greatly compressed. Head width $2\frac{1}{2}$ its length. Snout obtuse, width $1\frac{1}{8}$ in its length. Eye—elevated, hind edge slightly advanced from middle, diameter $3\frac{1}{8}$ in head. Mouth small, gape short. Maxillary well inclined, $3\frac{1}{5}$ in heads. Lower jaw little shorter than upper. Teeth fine, in narrow bands in jaws. Nostrils rather small, together, close before middle of front eye edge. Interorbital $3\frac{3}{4}$ in head, superciliary edge with 3 small denticles. Row of 6 median small occipital denticles. Lower preopercle edge with 8 denticles. Gill-rakers— 2×6 short weak points, about $\frac{1}{6}$ of gill-filaments, which equal eye. Scales largely adherent cycloid, with 2 or 3 basal radiating striæ; concentric striæ complete, 22 or 23. Lateral line well arched, largely parallel with upper profile.

Fins—Third dorsal spine $1\frac{3}{4}$ in head. Eighth dorsal ray $1\frac{3}{5}$. Second anal spine $2\frac{3}{5}$. Sixth anal ray 2. Least depth of caudal peduncle $3\frac{3}{5}$. Caudal length $1\frac{1}{10}$. Pectoral $1\frac{1}{8}$. Ventral 1, spine slightly less than half of fin. Colour—General color pale brown, dusted with minute dark dots. Fins neutral-dusky, pectoral pale. One example, 46 mm.

SCORPÆNIDÆ.

Gymnapistes dracæna (Cuvier). "Thumba".

Head $2\frac{1}{3}$ to $2\frac{1}{5}$; depth $2\frac{2}{3}$ to $2\frac{3}{4}$; D. III, IX, 7 or 8; A. III, 6; tubes 22 or 23 in lateral line to caudal base and 1 more on latter.

Body ovoid, elongate, strongly compressed, deepest at ventral origin. Head width 2 to $2\frac{1}{10}$ in its total length. Snout obtuse, length $\frac{1}{2}$ to $\frac{2}{5}$ its width or $4\frac{3}{4}$ in head measured from upper jaw tip. Eye—elevated, hind edge midway in head length, $3\frac{2}{3}$ to $4\frac{3}{4}$ in head. Mouth moderate, mandible well protruded. Maxillary reaches $\frac{2}{3}$ in eye, expansion $1\frac{2}{3}$ to $1\frac{1}{2}$, length $2\frac{3}{4}$ to $2\frac{1}{2}$ in head. Bands of minute fine teeth in jaws, on vomer and palatines, none on tongue. Interorbital convex, equals snout. Front preorbital spine short, hind one long or $\frac{2}{3}$ to $\frac{1}{2}$ of eye. Opercular spine nearly long as orbit. Gill-rakers— 5×13 , short, clavate, about $\frac{1}{3}$ of gill-filaments, which half of eye. Scales very small, rather sparse on trunk, not extending on predorsal, chest or belly and few on head; each with radiating basal striæ; circuli about 15.

Fins—Third dorsal spine $1\frac{3}{4}$ to 2 in head. Second dorsal ray $1\frac{7}{8}$ to 2. Third anal spine 2 to $2\frac{1}{3}$. Second anal ray $1\frac{7}{8}$ to 2. Caudal peduncle compressed, least depth equals its length or $3\frac{3}{4}$ to 4 in head. Caudal truncate, $1\frac{1}{4}$ to $1\frac{1}{3}$. Pectoral 1 to $1\frac{1}{10}$. Ventral $1\frac{1}{3}$ to $1\frac{1}{2}$, reaches soft anal origin, spine $\frac{3}{4}$ to $\frac{1}{2}$ fin length. Colour—Gray brown with irregular darker blotches on back and upper surfaces. Lower surfaces pale to whitish. Caudal whitish, with 3 gray submarginal transverse streaks. Other fins all more or less neutral black terminally, though basal half of ventral whitish. Black blotch on spinous dorsal from six to eighth spines. Soft dorsal nearly black. Iris slaty. Length, 41 or 42 mm.

(To be continued.)